

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1           1.       (Previously Presented) A method of transferring packets from  
2 communication hardware to a host computing device, the method comprising:  
3           receiving a set of packets at a communication interface;  
4           in a hybrid buffer of a host computing device, writing a first type II  
5 completion line configured to identify a first payload buffer in which payloads of  
6 a first subset of the packets are stored, wherein the type II completion line  
7 includes an address or index of a payload buffer and other information common to  
8 the set of packets;  
9           for each packet in the set of packets, writing a corresponding per-packet  
10 type I completion line in the hybrid buffer, wherein the type I completion line  
11 includes information about a length of the packet, a length and a storage location  
12 of a header for the packet, and other information useful for processing the packet;  
13           after writing said per-packet type I completion lines, writing a type 0  
14 completion line, wherein a type 0 completion line indicates that no more packets  
15 are currently stored following the address or index indicated in the type II  
16 completion line;  
17           signaling the host computing device that a set of packets is ready to be  
18 processed by configuring a single completion descriptor to identify the hybrid  
19 buffer in which the completion lines were stored; and  
20           at the host computing device, reading the single completion descriptor and  
21 accessing the identified hybrid buffers to process the packets.

1           2.     (Previously Presented) The method of claim 1, further comprising:  
2                 in the hybrid buffer, writing a second type II completion line configured to  
3     identify a second payload buffer in which payloads of a second subset of the  
4     packets are stored.

1           3.     (Cancelled)

1           4.     (Previously Presented) The method of claim 1, wherein said  
2     completion descriptor comprises only said hybrid buffer identity.

1           5.     (Cancelled)

1           6.     (Previously Presented) The method of claim 1, wherein:  
2                 said first type II completion line further comprises a checksum type field  
3     and a checksum start field; and  
4                 said checksum type field and said checksum start field apply to every  
5     packet in the first subset of packets.

1           7.     (Previously Presented) The method of claim 1, wherein said  
2     writing a per-packet type I completion line comprises packing said per-packet  
3     completion lines into the hybrid buffer.

1           8.     (Previously Presented) The method of claim 7, further comprising:  
2                 packing headers of the packets into the hybrid buffer.

1           9.     (Previously Presented) The method of claim 1, wherein each said  
2     per-packet type I completion line comprises:

3 a length of a header of the corresponding packet; and  
4 a length of a payload of the corresponding packet.

1 10. (Previously Presented) The method of claim 9, wherein each said  
2 per-packet type I completion line further comprises:  
3 an offset of the payload of the corresponding packet within a buffer in  
4 which the payload is stored; and  
5 a checksum of the corresponding packet.

1 11. (Original) The method of claim 1, wherein each packet in the set of  
2 packets is part of the same communication connection.

1 12. (Previously Presented) The method of claim 1, further comprising  
2 at the host computing device, after said signaling:  
3 reading said per-packet type I completion lines until encountering said  
4 type 0 completion lines; and  
5 using said per-packet type I completion lines to access headers and  
6 payloads of the corresponding packets.

1 13. (Previously Presented) A computer readable medium storing  
2 instructions that, when executed by a computer, cause the computer to perform a  
3 method of transferring packets from communication hardware to a host computing  
4 device, the method comprising:  
5 receiving a set of packets at a communication interface;  
6 in a hybrid buffer of a host computing device, writing a first type II  
7 completion line configured to identify a first payload buffer in which payloads of  
8 a first subset of the packets are stored, wherein the type II completion line

9 includes an address or index of a payload buffer and other information common to  
10 the set of packets;  
11 for each packet in the set of packets, writing a corresponding per-packet  
12 type I completion line in the hybrid buffer, wherein the type I completion line  
13 includes information about a length of the packet, a length and a storage of a  
14 header for the packet, and other information useful for processing the packet;  
15 after writing said per-packet completion lines, writing a type 0 completion  
16 line, wherein a type 0 completion line indicates that no more packets are currently  
17 stored following the address or index indicated in the type II completion line; and  
18 signaling the host computing device that a set of packets is ready to be  
19 processed by configuring a single completion descriptor to identify the hybrid  
20 buffer in which the completion lines were stored; and  
21 at the host computing device, reading the single completion descriptor and  
22 accessing the identified hybrid buffers to process the packet.

1 14. (Currently Amended) A computer readable medium containing a  
2 ~~packet description data structure~~ configured for describing multiple packets to a  
3 host computing device, the ~~packet description data structure~~ comprising:  
4 one or more headers of packets being transferred from communication  
5 hardware to the host computing device;  
6 for each of the packets, a corresponding per-packet type I completion line  
7 stored in a hybrid buffer, wherein the type I completion line is configured to  
8 identify:  
9 a length of a header of the corresponding packet;  
10 a length of a payload of the corresponding packet; and  
11 information configured to identify a location of the payload;  
12 a type 0 completion line, wherein a type 0 completion line is a null

13 completion line used to indicate no more packets are currently stored; and  
14 a single completion descriptor configured to identify the hybrid buffer,  
15 thereby facilitating the efficient transfer of the packets

1 15. (Previously Presented) The computer readable medium of claim  
2 14, wherein each said per-packet type I completion line further comprises:  
3 a checksum of the corresponding packet.

1 16. (Currently Amended) The computer readable medium of claim 14,  
2 wherein said packet description data structure further comprises a payload type II  
3 completion line configured to identify a payload buffer second data structure in  
4 which payloads of the packets are stored.

1 17. (Currently Amended) The computer readable medium of claim 16,  
2 wherein said information in said per-packet type I completion line comprises an  
3 offset of the payload in the payload buffer second data structure.

1 18. (Previously Presented) The computer readable medium of claim  
2 16, wherein:  
3 said payload type II completion line further comprises a set of parameters  
4 applicable to each of the packets; and  
5 a first parameter in said set of parameters is configured to identify a  
6 checksum type.

1 19. (Currently Amended) The computer readable medium of claim 14,  
2 wherein the headers are stored in fixed-sized portions of the packet description  
3 data structure.

20. (Previously Presented) A computing device, comprising:

- a communication interface configured to transfer packets from a communication link to the computing device;
- software for operating the communication interface;
- payload memory buffers for receiving payloads of packets transferred from the communication interface;
- hybrid buffers for receiving headers of the packets transferred from the communication interface and completion lines configured to facilitate processing of the packets by the software;
- a single completion descriptor configured for the communication interface to use to signal the software that one or more packets have been transferred to the computing device;

wherein said completion lines in a hybrid buffer include:

- a payload type II completion line configured to identify a first payload buffer in which payloads of one or more of the packets are stored, wherein the type II completion line includes an address or index of a payload buffer and other information common to the set of packets;
- per-packet type I completion lines configured to identify locations of the packets' payloads in the first payload buffer and locations of the packets' headers in the first hybrid buffer, wherein the type I completion line includes information about a length of the packet, a length and a storage of a header for the packet, and other information useful for processing the packet; and
- a type 0 completion line, wherein a type 0 completion line indicates that no more packets are currently stored following the address or index indicated in the type II completion line.

1           21.     (Previously Presented) The computing device of claim 20, wherein  
2     said completion lines further include:

3           a type 0 completion line, where in a type 0 completion line indicates that  
4     no more completion lines are stored in the hybrid buffer.

1           22.     (Previously Presented) The computing device of claim 20, wherein  
2     a single completion descriptor used by the communication interface to signal the  
3     transfer of a first set of packets is configured by the communication interface to  
4     include only the identity of the hybrid buffer in which headers of the first set of  
5     packets are stored.

1           23.     (Previously Presented) The computing device of claim 20, wherein:  
2     said payload type II completion line further comprises a set of parameters  
3     common to the one or more packets; and  
4     the set of parameters comprises a checksum type.

1           24.     (Previously Presented) The computing device of claim 20, wherein  
2     each said per-packet type I completion line corresponds to one packet and  
3     comprises:  
4           a length of a header of the corresponding packet; and  
5           a length of the payload of the corresponding packet.

1           25.     (Previously Presented) The computing device of claim 24, wherein  
2     each said per-packet type I completion line further comprises one or more of:  
3           an offset of the payload in the first payload buffer; and  
4           an offset of the header in the first hybrid buffer.

1           26.     (Previously Presented) The computing device of claim 24, wherein  
2     each said per-packet type I completion line further comprises a checksum of the  
3     corresponding packet.